FIG. 1

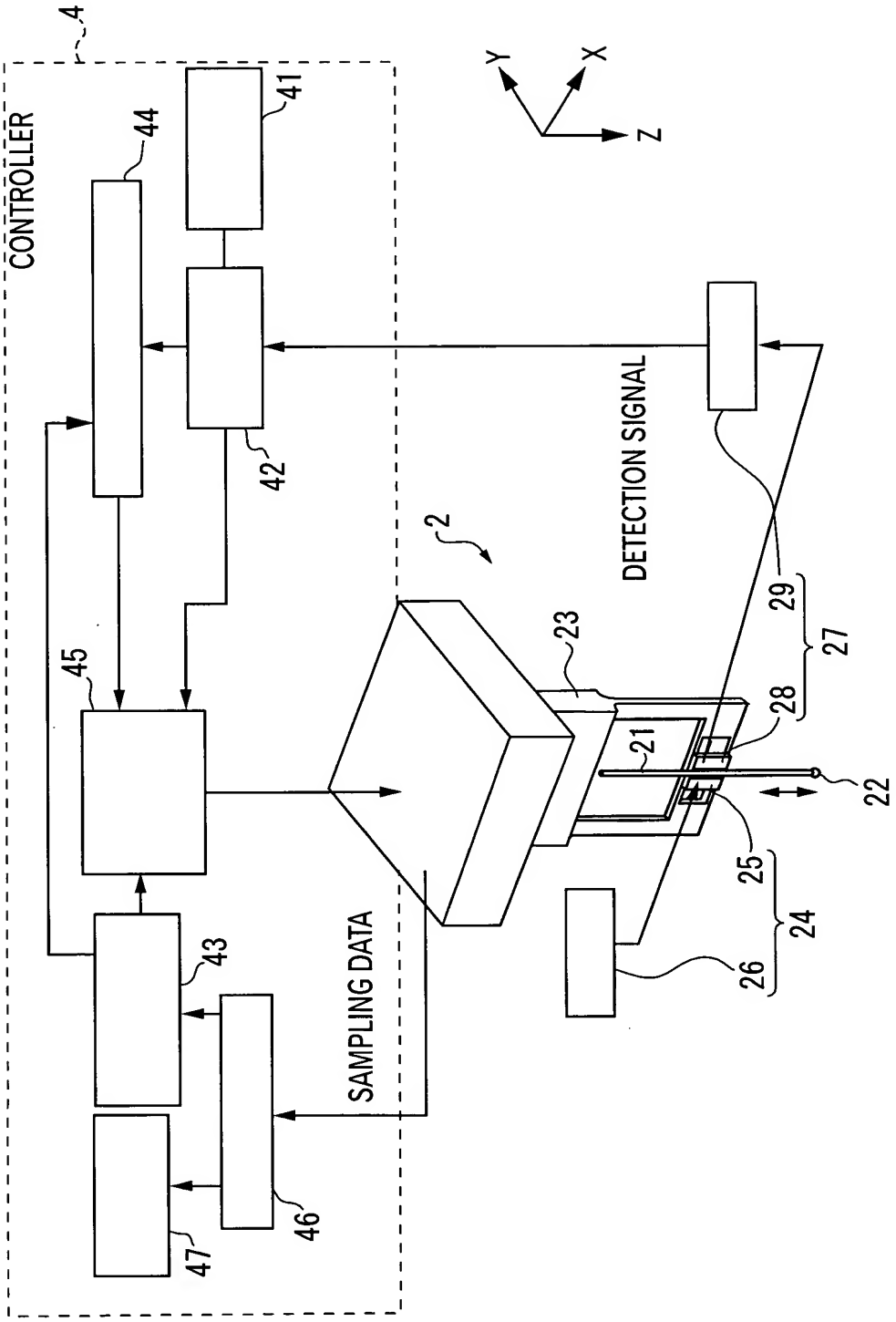

4
CONTROLLER
41
44
42
45
43
47
46
SAMPLING DATA
DETECTION SIGNAL
2
23
21
28
29
27
22
25
24
26
Y
X
Z

FIG. 2

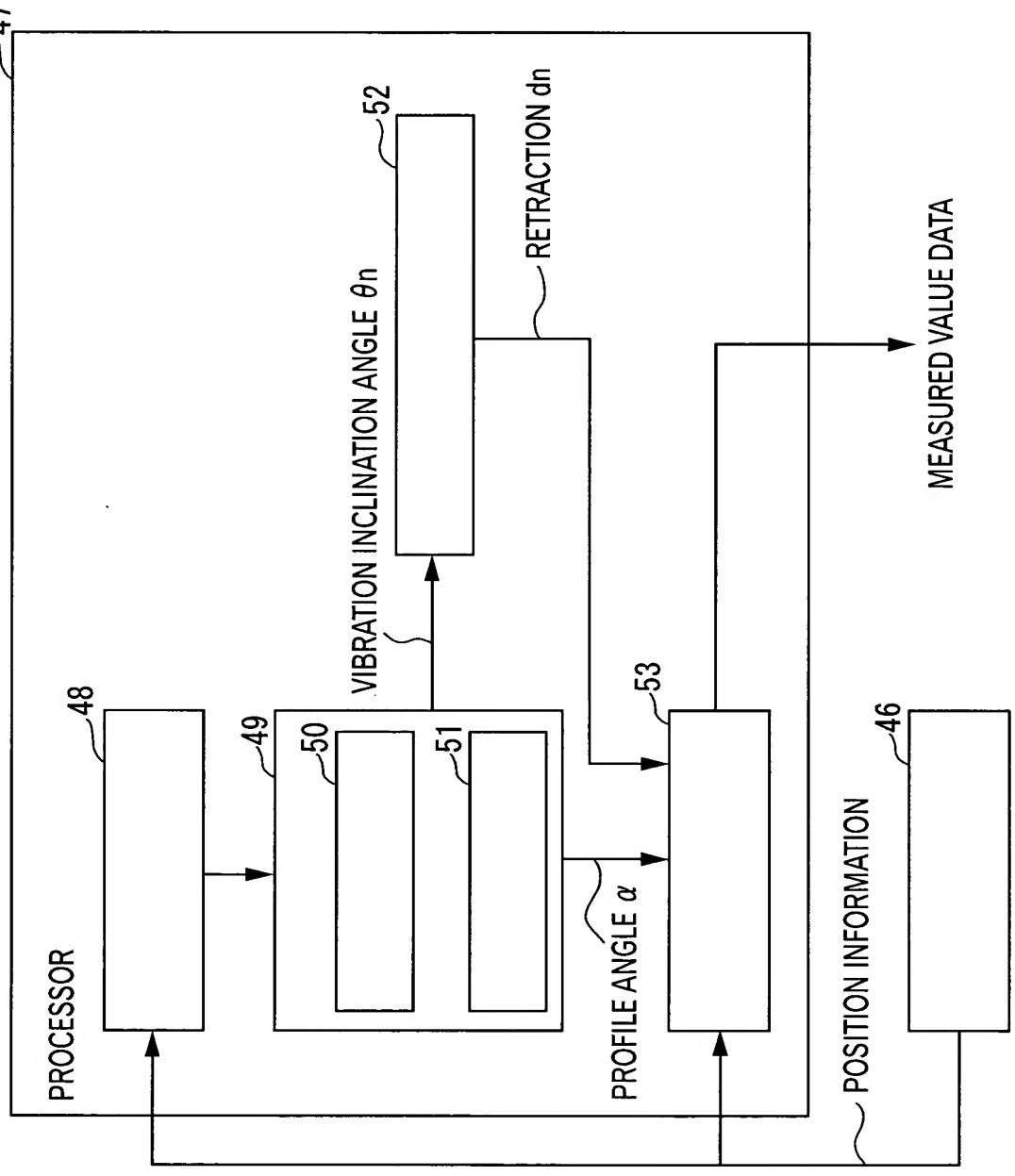

47
52
RETRACTION dn
VIBRATION INCLINATION ANGLE θn
MEASURED VALUE DATA
48
49
50
51
53
46
PROCESSOR
PROFILE ANGLE α
POSITION INFORMATION

FIG. 3

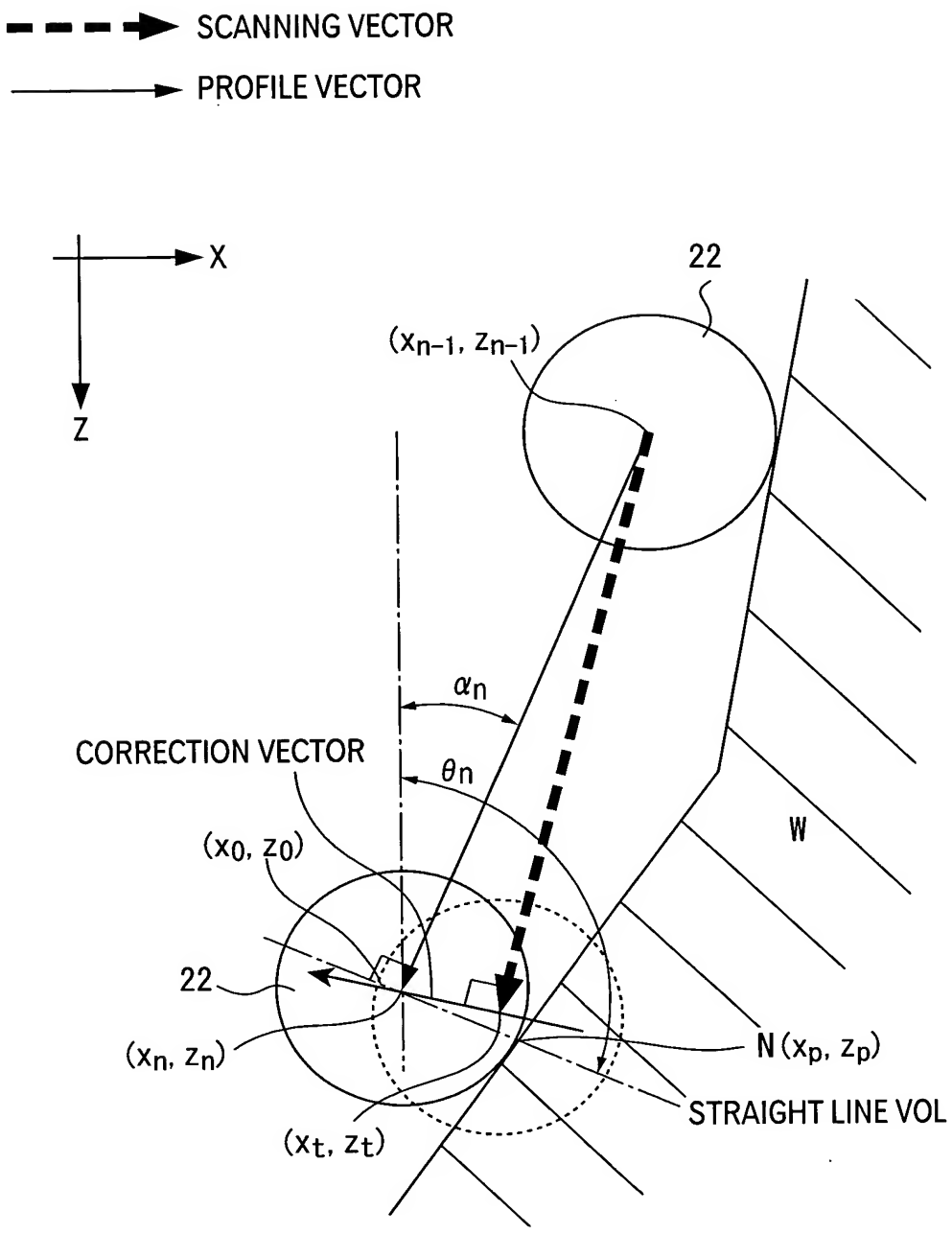

SCANNING VECTOR
PROFILE VECTOR
X
Z
22
(x_{n-1}, z_{n-1})
α_n
θ_n
CORRECTION VECTOR
(x_0, z_0)
22
(x_n, z_n)
(x_t, z_t)
N (x_p, z_p)
STRAIGHT LINE VOL
W

FIG.4A

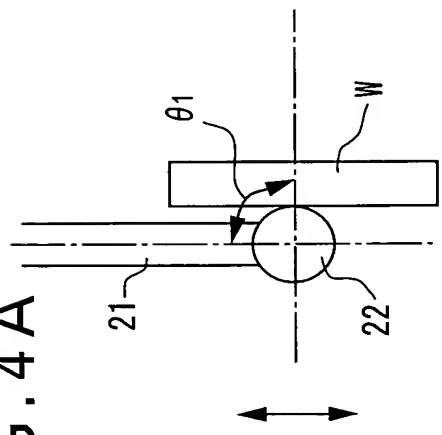


FIG.4B

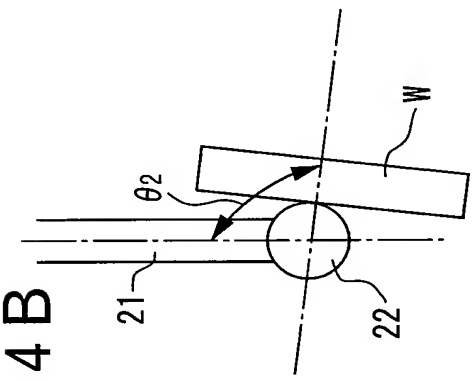


FIG.4C

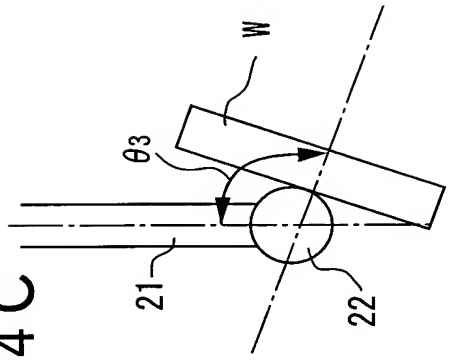


FIG.4D

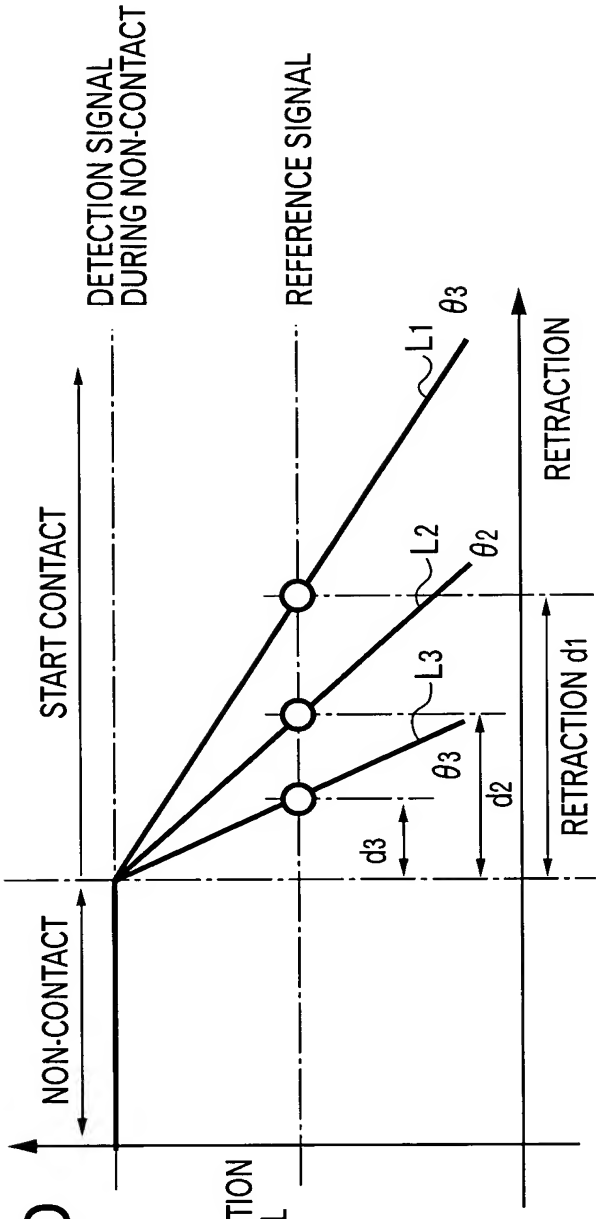


FIG. 5

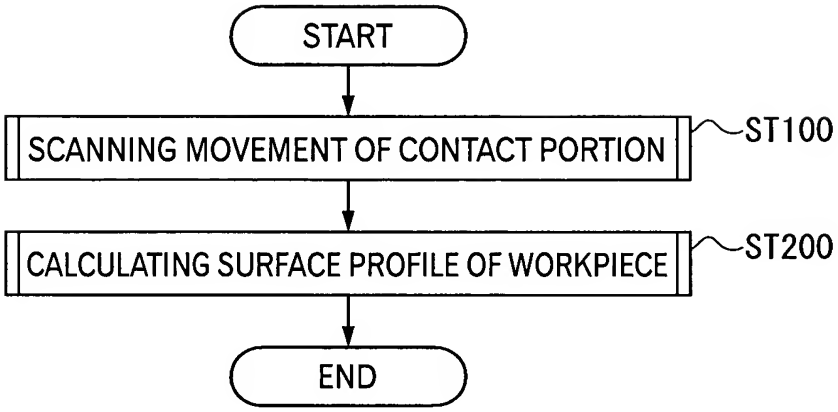

START
SCANNING MOVEMENT OF CONTACT PORTION
ST100
CALCULATING SURFACE PROFILE OF WORKPIECE
ST200
END

FIG. 6

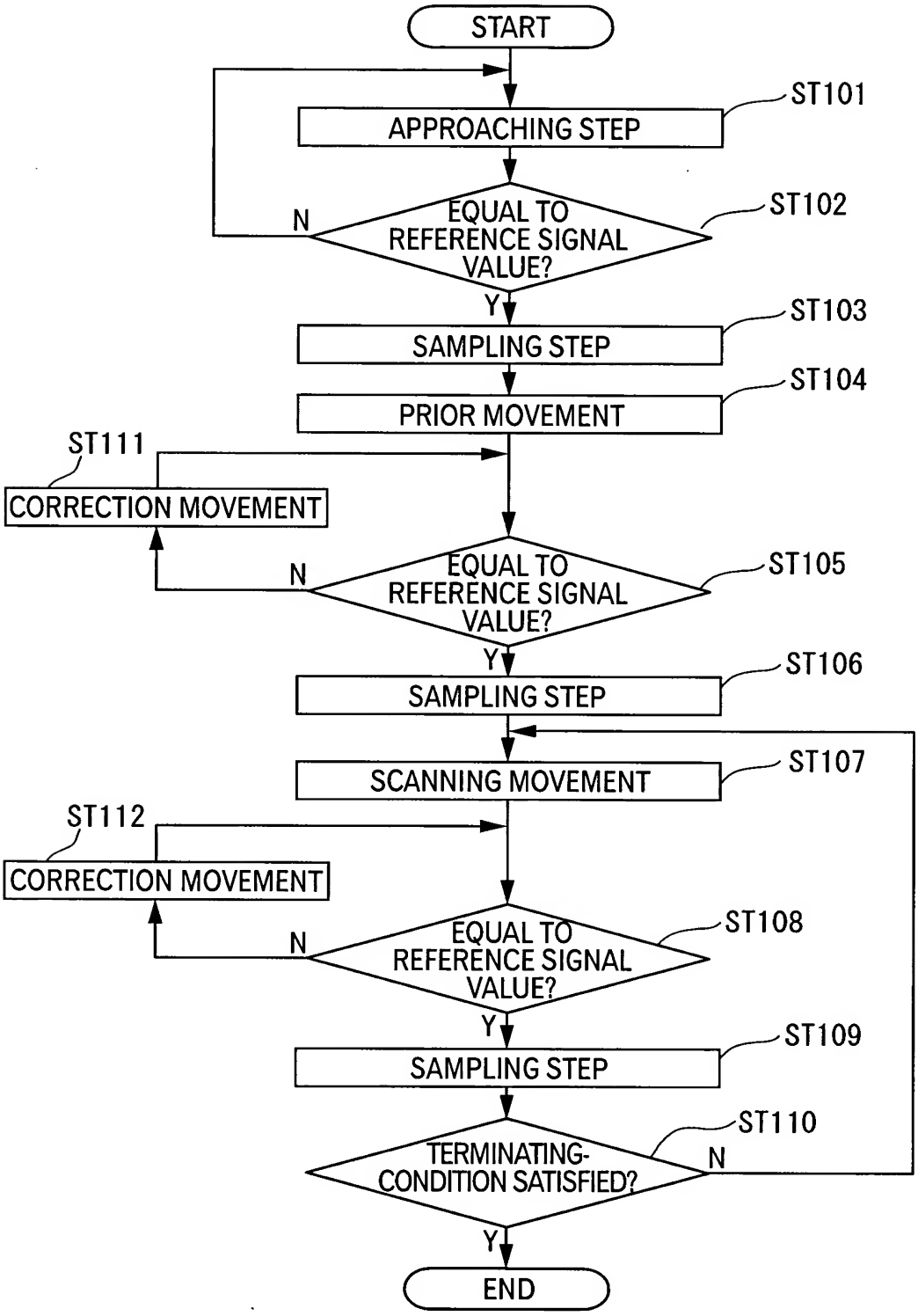

START
ST101
APPROACHING STEP
ST102
EQUAL TO REFERENCE SIGNAL VALUE?
N
Y
ST103
SAMPLING STEP
ST104
PRIOR MOVEMENT
ST111
CORRECTION MOVEMENT
N
ST105
EQUAL TO REFERENCE SIGNAL VALUE?
Y
ST106
SAMPLING STEP
ST107
SCANNING MOVEMENT
ST112
CORRECTION MOVEMENT
N
ST108
EQUAL TO REFERENCE SIGNAL VALUE?
Y
ST109
SAMPLING STEP
ST110
TERMINATING-CONDITION SATISFIED?
N
Y
END

FIG. 7

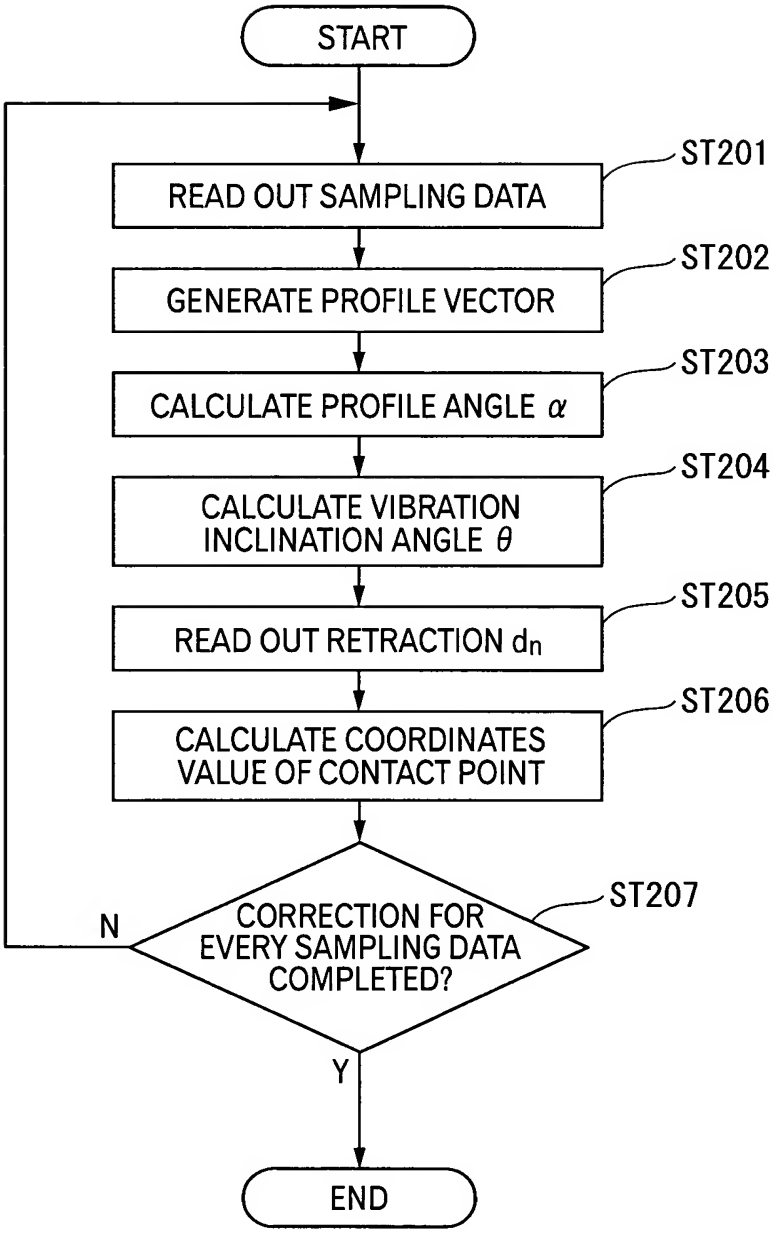

START
READ OUT SAMPLING DATA
ST201
GENERATE PROFILE VECTOR
ST202
CALCULATE PROFILE ANGLE α
ST203
CALCULATE VIBRATION INCLINATION ANGLE θ
ST204
READ OUT RETRACTION dn
ST205
CALCULATE COORDINATES VALUE OF CONTACT POINT
ST206
CORRECTION FOR EVERY SAMPLING DATA COMPLETED?
ST207
N
Y
END

FIG. 8

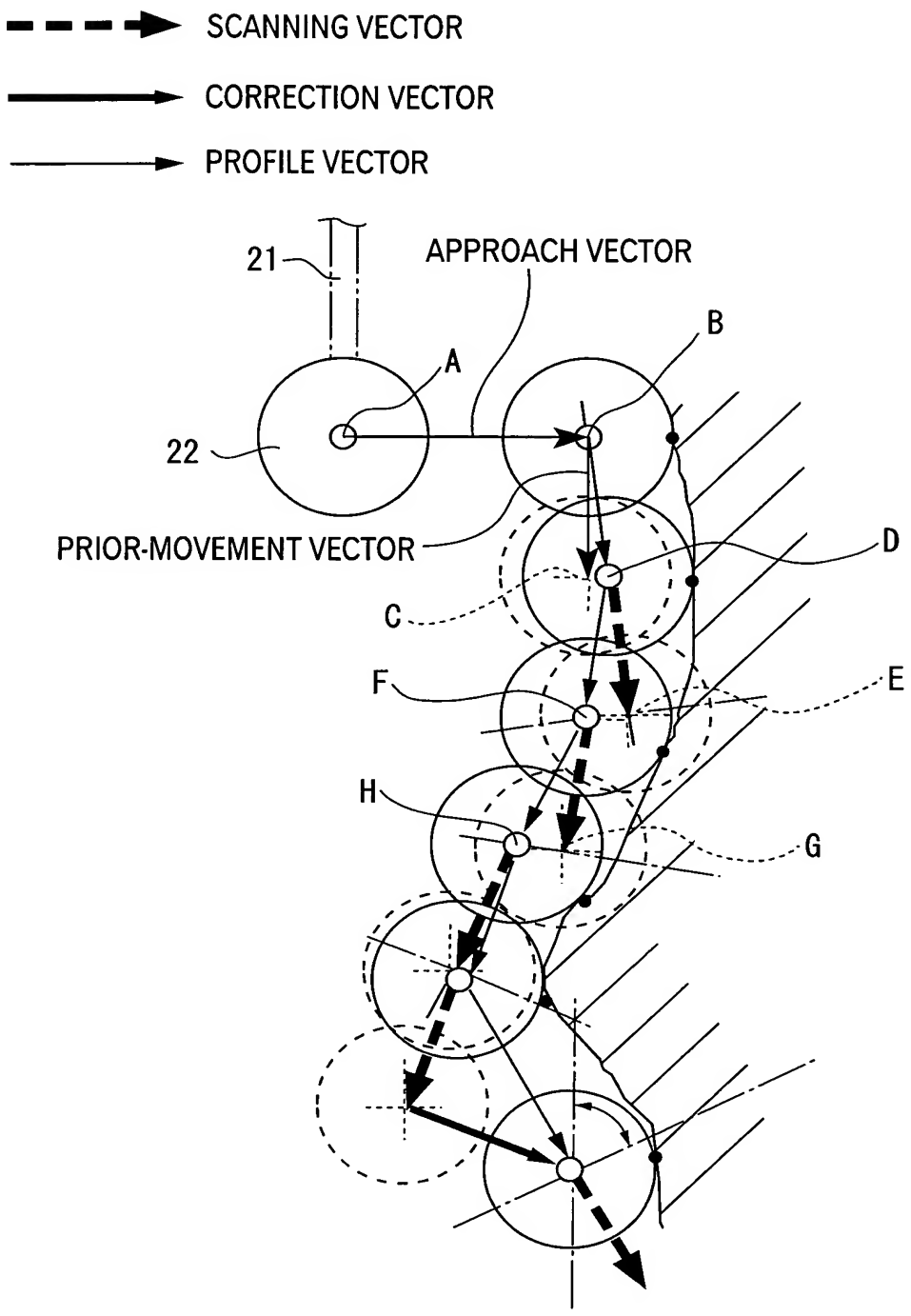

SCANNING VECTOR
CORRECTION VECTOR
PROFILE VECTOR
21
APPROACH VECTOR
B
A
22
PRIOR-MOVEMENT VECTOR
D
C
F
E
H
G

FIG. 9

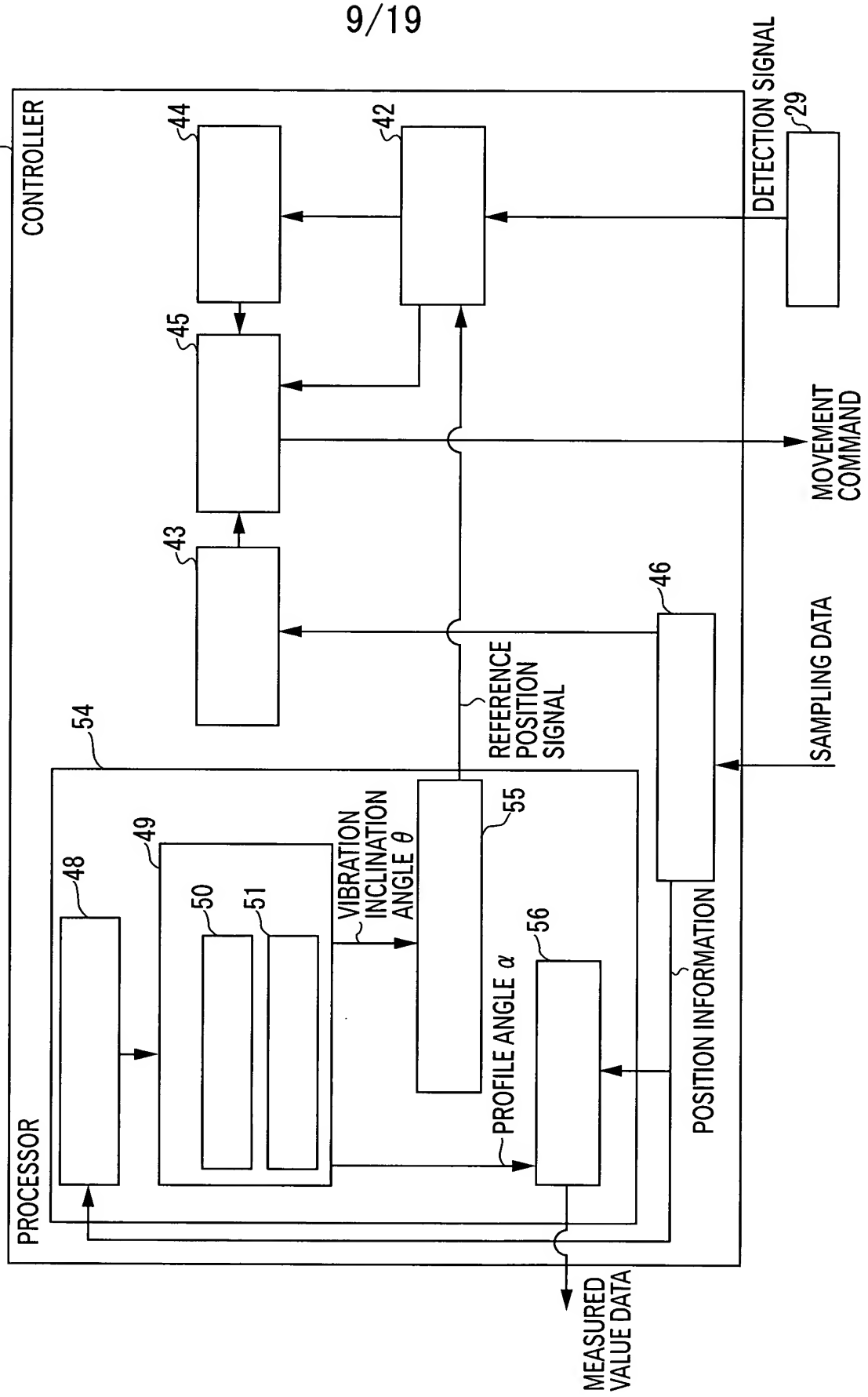

4
CONTROLLER
44
42
29
DETECTION SIGNAL
45
MOVEMENT COMMAND
43
46
54
REFERENCE POSITION SIGNAL
SAMPLING DATA
55
49
48
50
51
VIBRATION INCLINATION ANGLE θ
56
PROFILE ANGLE α
POSITION INFORMATION
PROCESSOR
MEASURED VALUE DATA

FIG.10

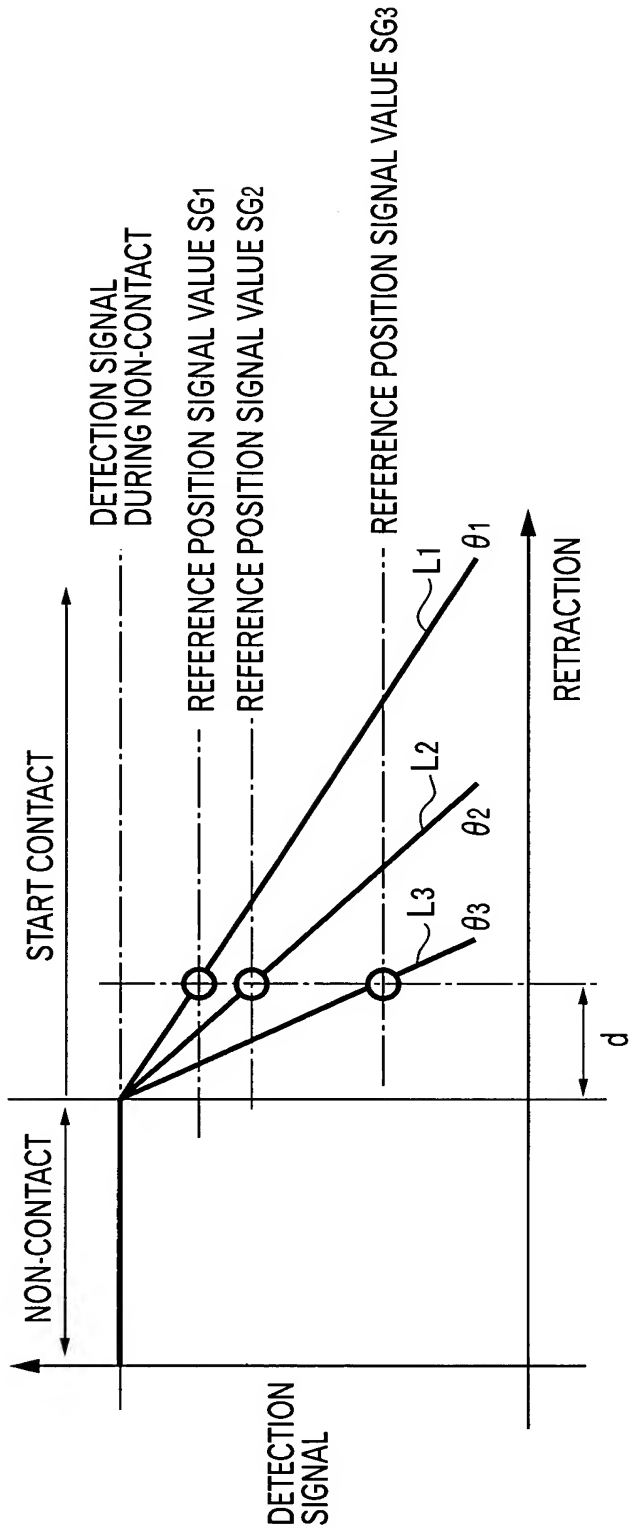

DETECTION SIGNAL
NON-CONTACT
START CONTACT
DETECTION SIGNAL DURING NON-CONTACT
REFERENCE POSITION SIGNAL VALUE SG1
REFERENCE POSITION SIGNAL VALUE SG2
REFERENCE POSITION SIGNAL VALUE SG3
L1
L2
L3
θ1
θ2
θ3
RETRACTION
d

FIG. 11

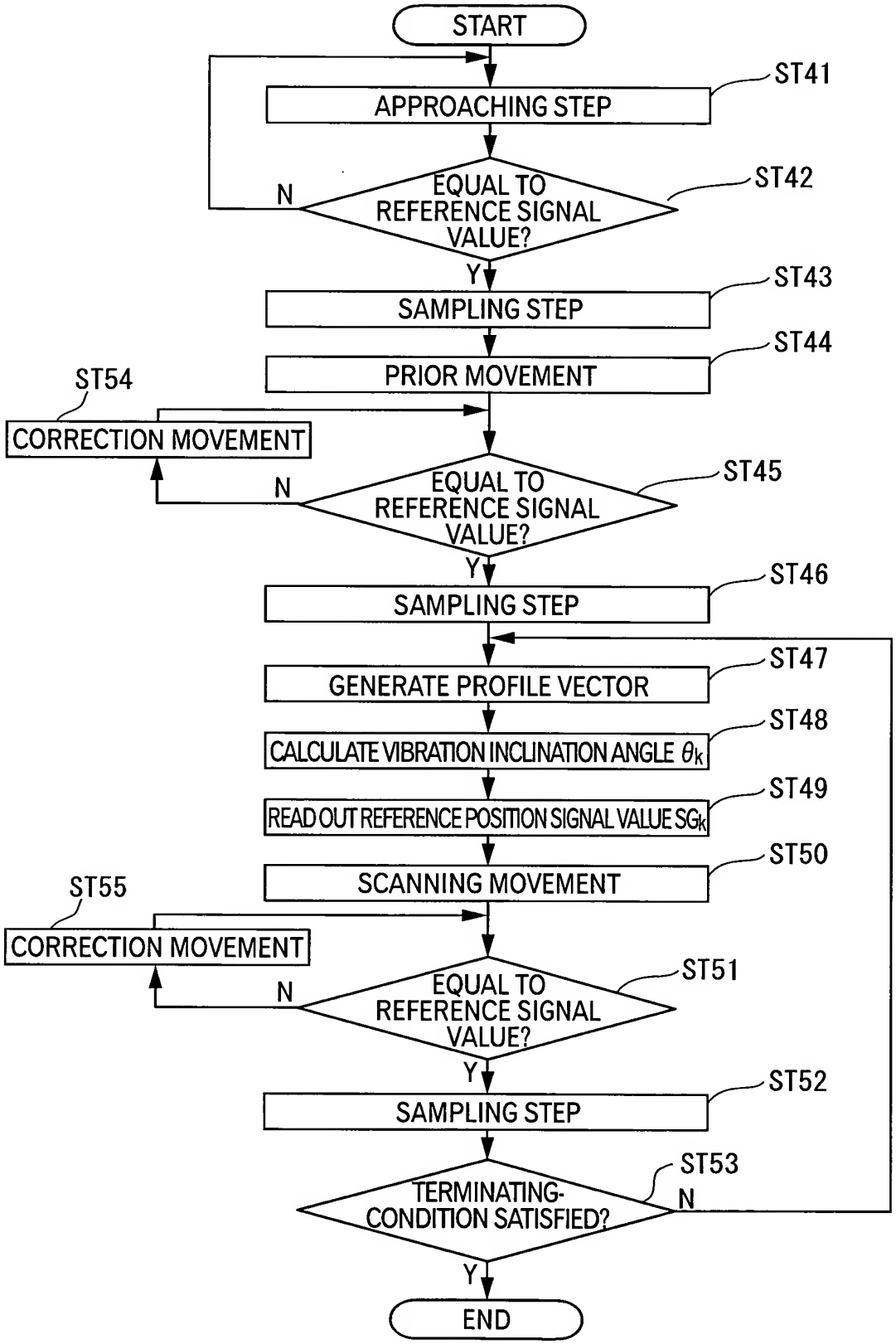

START
ST41
APPROACHING STEP
ST42
EQUAL TO REFERENCE SIGNAL VALUE?
N
Y
ST43
SAMPLING STEP
ST44
PRIOR MOVEMENT
ST54
CORRECTION MOVEMENT
ST45
EQUAL TO REFERENCE SIGNAL VALUE?
N
Y
ST46
SAMPLING STEP
ST47
GENERATE PROFILE VECTOR
ST48
CALCULATE VIBRATION INCLINATION ANGLE θk
ST49
READ OUT REFERENCE POSITION SIGNAL VALUE SGk
ST50
SCANNING MOVEMENT
ST55
CORRECTION MOVEMENT
ST51
EQUAL TO REFERENCE SIGNAL VALUE?
N
Y
ST52
SAMPLING STEP
ST53
TERMINATING-CONDITION SATISFIED?
N
Y
END

FIG. 12

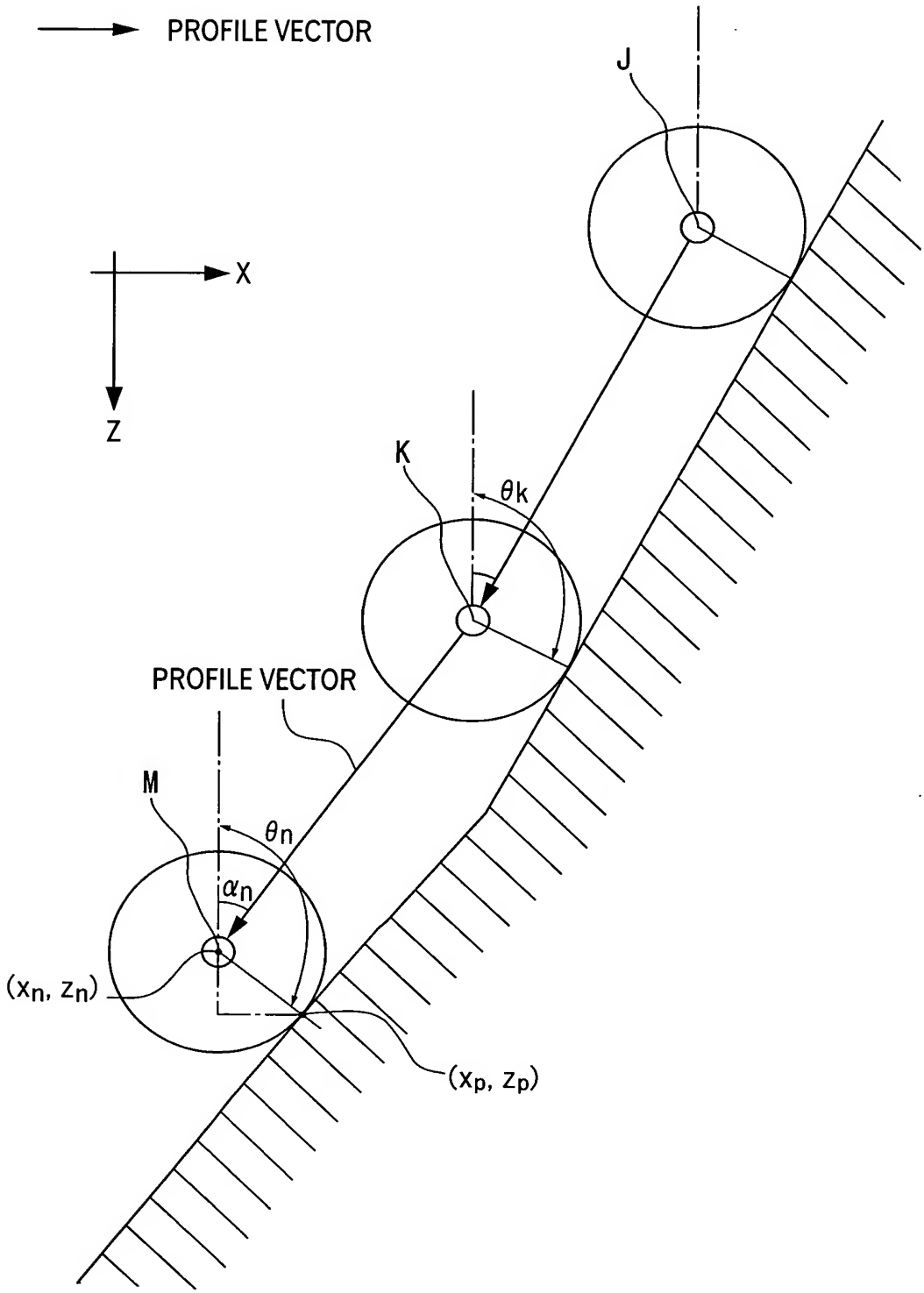


FIG.13A

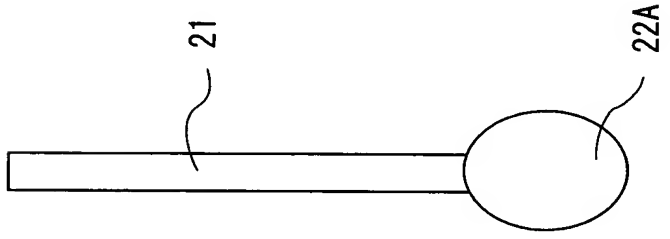


FIG.13B

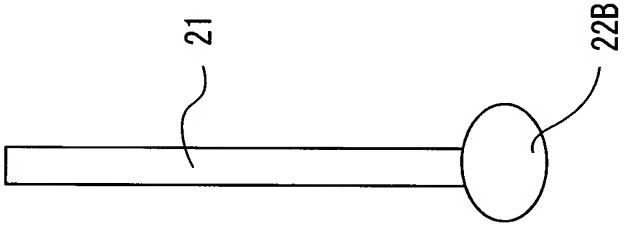


FIG.13C

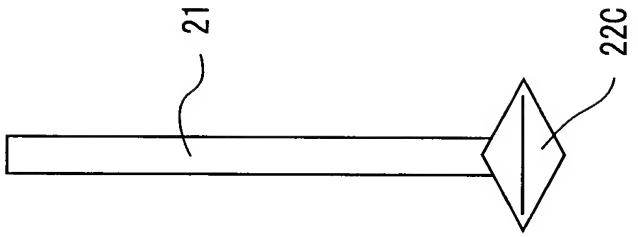


FIG. 14

PRIOR ART

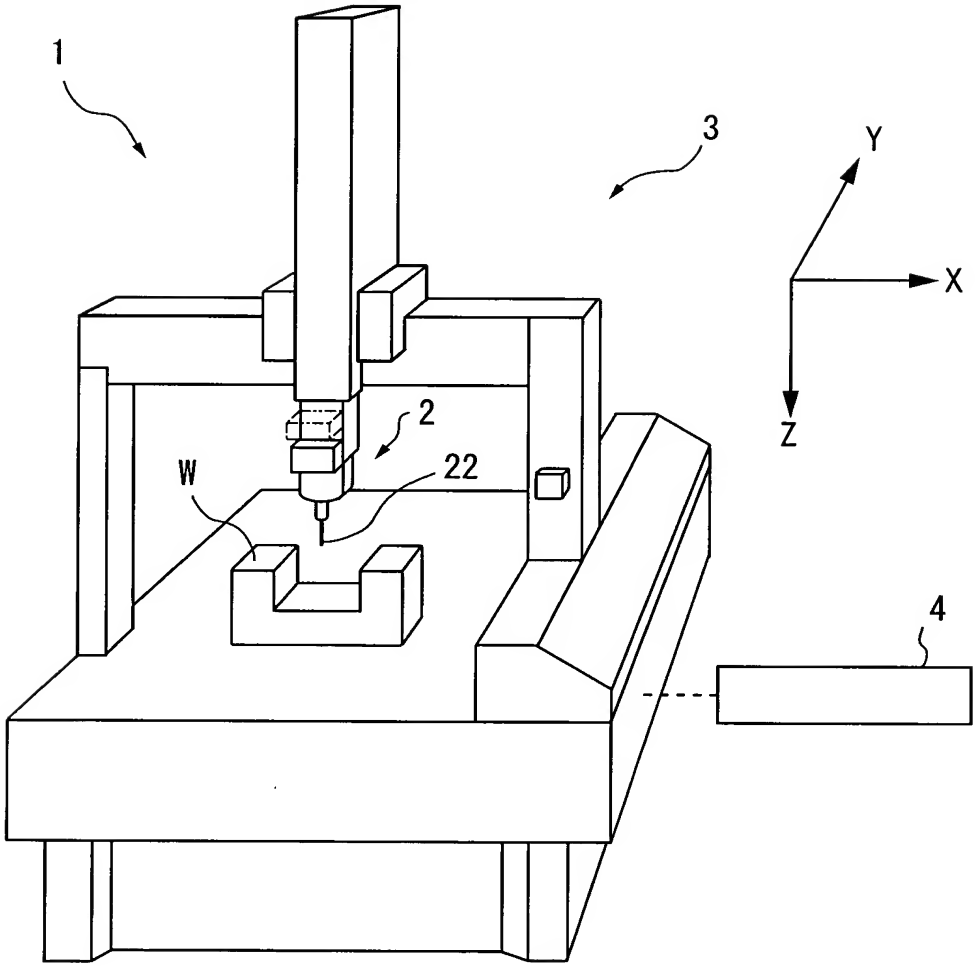
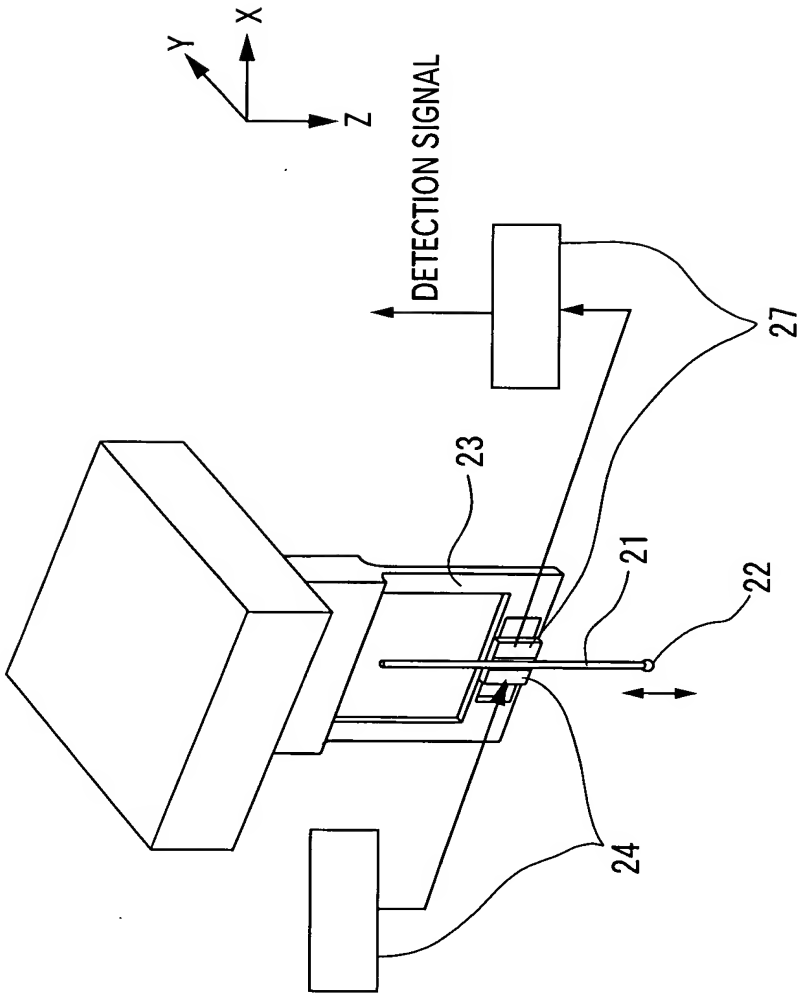


FIG. 15
PRIOR ART



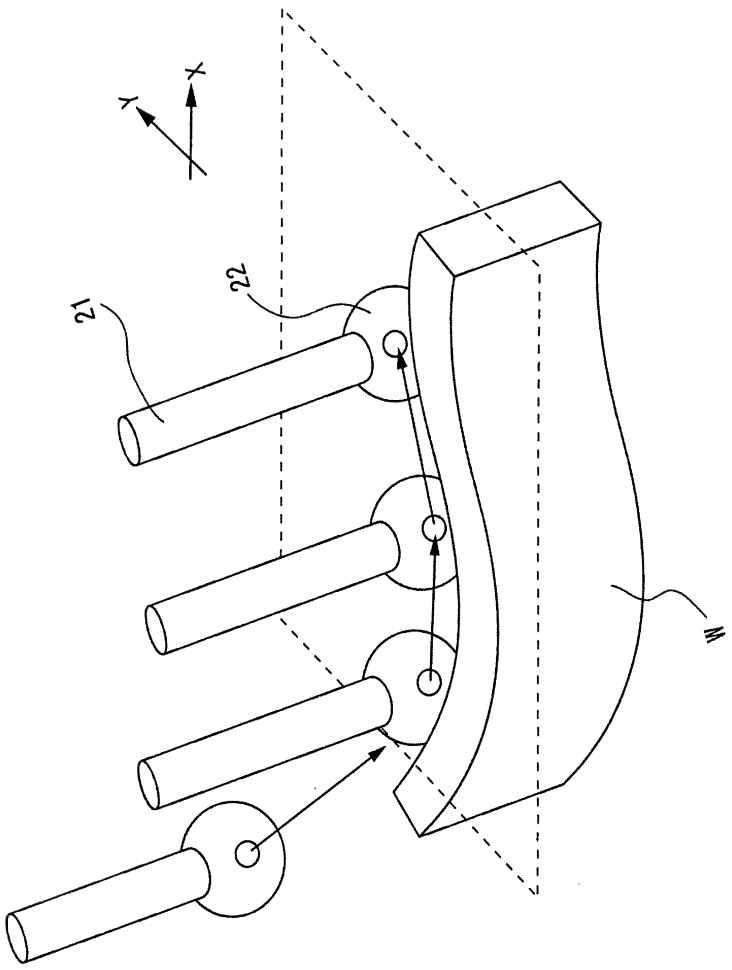


FIG. 16
PRIOR ART

FIG.17A

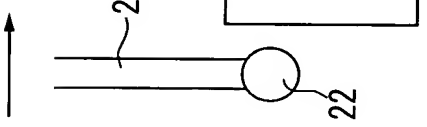


FIG.17B

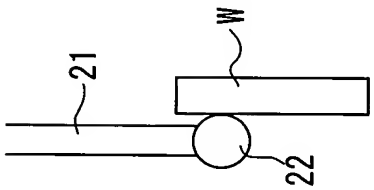


FIG.17C

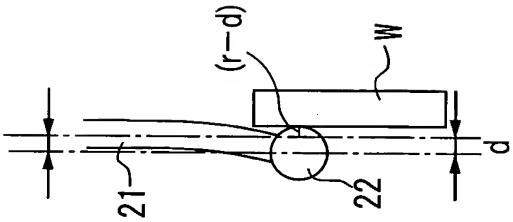


FIG.17D

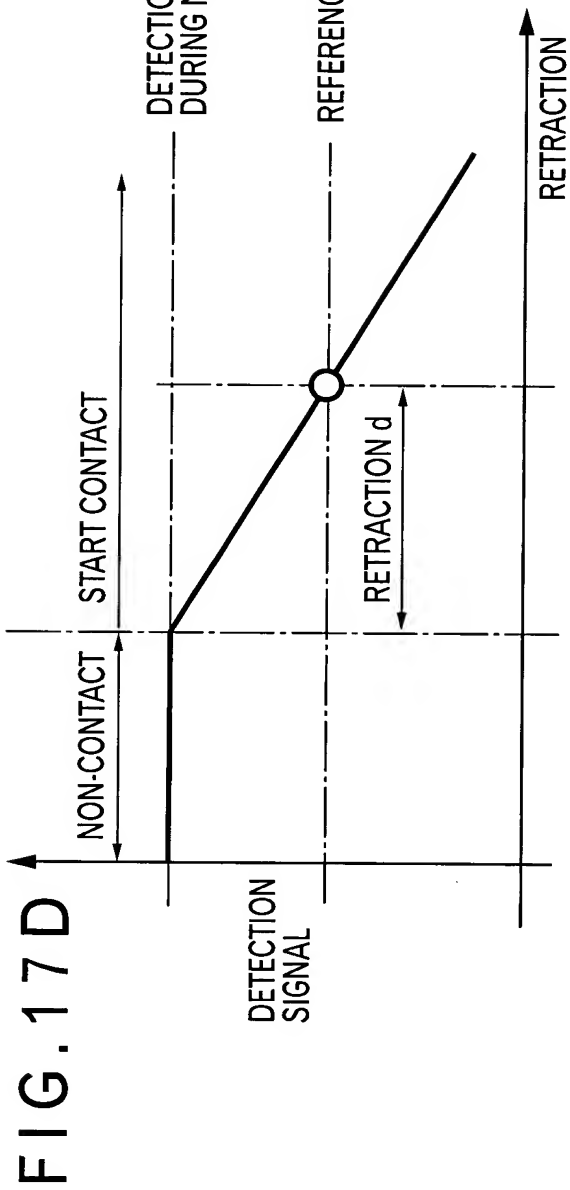


FIG. 18

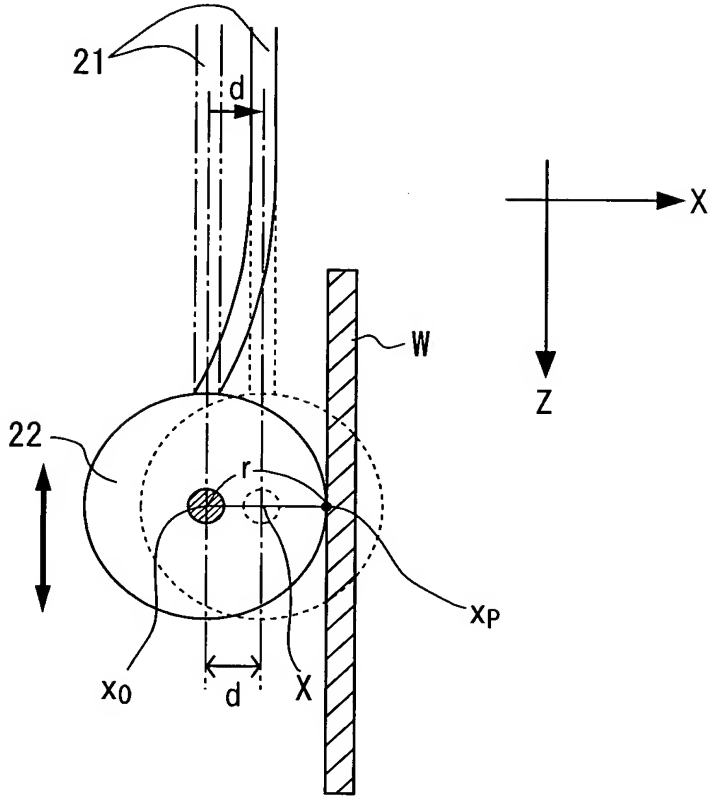


FIG. 19

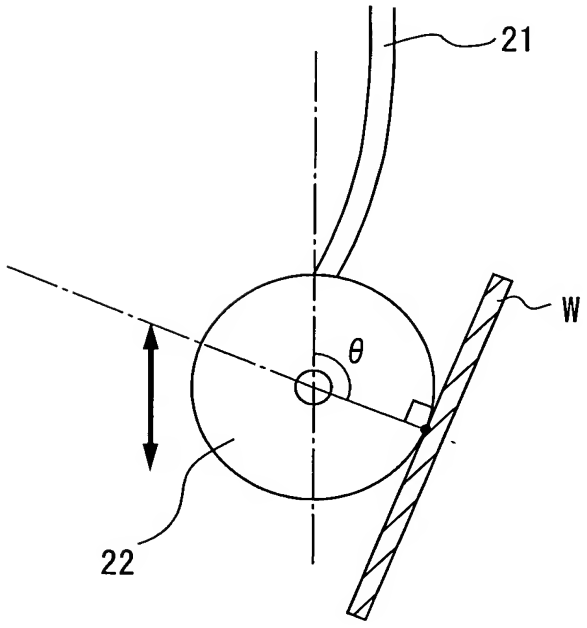
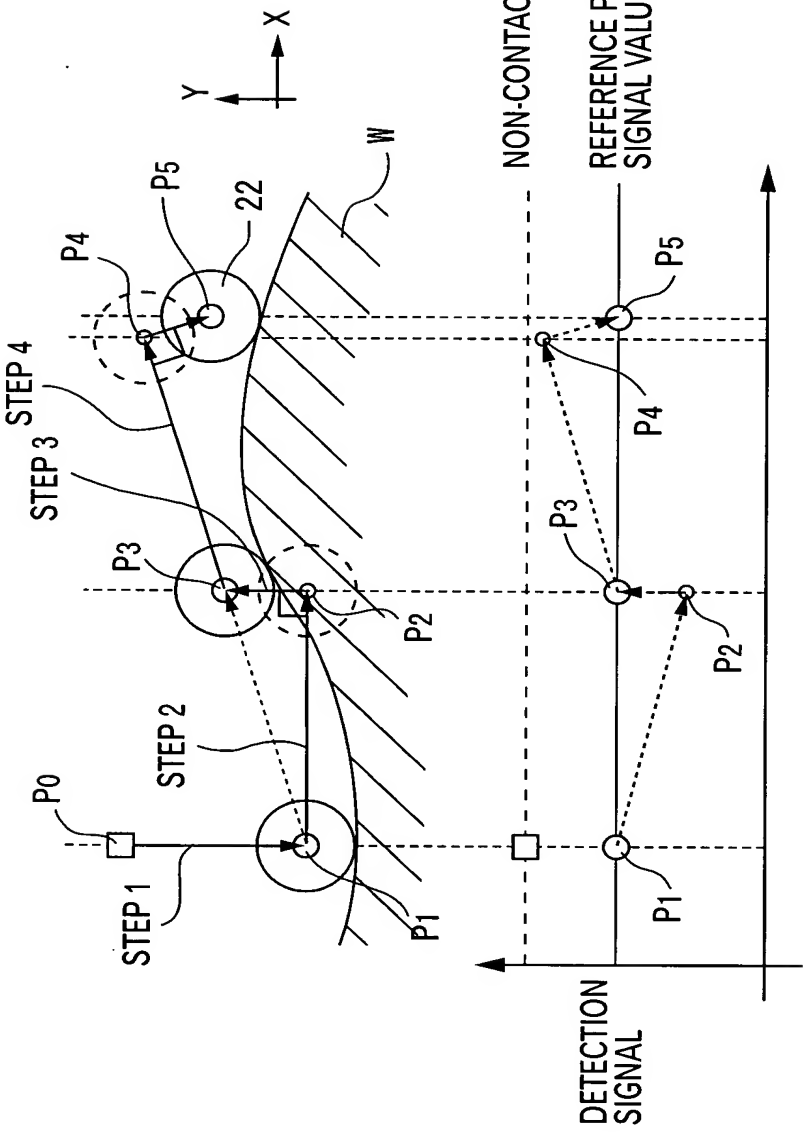



FIG.20
PRIOR ART